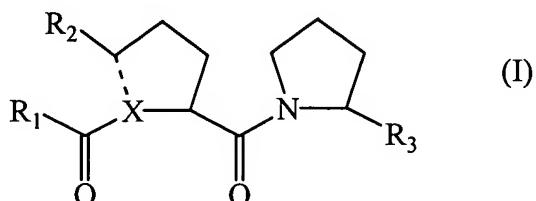


AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior versions of claims in this application.

1. (Original) A compound of formula (I)



wherein in the formula, X is N or C;

the dotted line represents a single or a double bond;

R₁ is:

a straight or branched alkyl chain having 1 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) each independently being COOR⁴, COR⁴, CR⁴(OR⁵)₂, COCH₂OR⁶, cyano, hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, nitro, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, wherein R⁴ is H, lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, heterocycle, aryl or aralkyl, R⁵ is lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, aryl or aralkyl and R⁶ is H, lower alkyl, lower acyl or halogen,

a straight or branched alkenyl chain having 2 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, carbocyclic ring unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, heterocyclic ring unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a substituted or unsubstituted alkyl or alkenyl group as defined above incorporating as a group member a substituted or unsubstituted carbocyclic ring or a heterocyclic ring as defined above,

hydroxy, lower alkoxy, aryloxy, aryl lower alkoxy, amino, amino lower alkyl, lower alkyl amino, aryl amino or aryl lower alkyl amino, wherein the said alkyl, aryl, or amino subgroups are unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above;

R₂ is:

H,

a straight or branched alkyl chain having 1 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) each independently being hydroxy, oxo, lower alkoxy, amino, lower alkyl amino, halogen, carboxyl, or lower acyl,

a straight or branched alkenyl chain having 2 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group, in the meaning of R₂, above,

or a straight or branched alkynyl chain having 2 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group, in the meaning of R₂, above;

R₃ is:

H, cyano, hydroxy, oxo, halogen, lower alkyl, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, wherein the said alkyl subgroups are unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group, in the meaning of R₁, above,

or R₃ is COOR⁴, COR⁴, CR⁴(OR⁵)₂ or COCH₂OR⁶, wherein R⁴ is H, lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, heterocycle, aryl, amino, lower alkyl amino, aryl amino or lower alkyl amino, wherein the said lower alkyl is unsubstituted or substituted with 1

or 2 substituent(s) each independently being cyano, hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, R⁵ is lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, aryl or aralkyl and R⁶ is lower acyl or halogen;

or a pharmaceutically acceptable salt or ester thereof,

provided, that

- a) when X is N, the dotted line represents a single bond and R₂ is not H;
- b) when X is C, the dotted line represents a double bond and R₂ is H;
- c) the compound is not 5-ethoxycarbonyl-N-benzyloxycarbonyl-2-[(2'-(S)-benzylcarbonyl)-1'-pyrrolidinylcarbonyl]pyrrolidine or 1,2-pyrrolidinedicarboxylic acid, 5-(1-pyrrolidinylcarbonyl)-,1-(phenylmethyl) ester.

2. (Original) A compound according to claim 1, wherein

X is N;

the dotted line represents a single bond;

R₁ is:

a straight or branched alkyl chain having 1 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) each independently being COOR⁴, COR⁴, CR⁴(OR⁵)₂, COCH₂OR⁶, cyano, hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, nitro, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, wherein R⁴ is H, lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, heterocycle, aryl or aralkyl, R⁵ is lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, aryl or aralkyl and R⁶ is H, lower alkyl, lower acyl or halogen,

a straight or branched alkenyl chain having 2 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, carbocyclic ring unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, heterocyclic ring unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a substituted or unsubstituted alkyl or alkenyl group as defined above incorporating as a group member a substituted or unsubstituted carbocyclic ring or a heterocyclic ring as defined above,

hydroxy, lower alkoxy, aryloxy, aryl lower alkoxy, amino, amino lower alkyl, lower alkyl amino, aryl amino or aryl lower alkyl amino, wherein the said alkyl, aryl or amino subgroups are unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above;

R₂ is:

a straight or branched alkyl chain having 1 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) each independently being hydroxy, oxo, lower alkoxy, amino, lower alkyl amino, halogen, carboxyl or lower acyl,

a straight or branched alkenyl chain having 2 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group, in the meaning of R₂, above,

or a straight or branched alkynyl chain having 2 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group, in the meaning of R₂, above;

R₃ is:

H, cyano, hydroxy, oxo, halogen, lower alkyl, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or

heterocycle, wherein the said alkyl subgroups are unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group, in the meaning of R₁, above,

or R₃ is COOR⁴, COR⁴, CR⁴(OR⁵)₂ or COCH₂OR⁶, wherein R⁴ is H, lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, heterocycle, aryl, amino, lower alkyl amino, aryl amino or lower alkyl amino, wherein the said lower alkyl is unsubstituted or substituted with 1 or 2 substituent(s) each independently being cyano, hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, R⁵ is lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, aryl or aralkyl and R⁶ is lower acyl or halogen, or a pharmaceutically acceptable salt or ester thereof.

3. (Original) A compound according to claim 2, wherein

R₁ is

a straight or branched alkyl chain having 1 to 5 carbon atoms unsubstituted or substituted with 1 or 2 substituent(s) each independently being hydroxy, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle,

a 3 to 7 membered, saturated or unsaturated, carbocyclic ring unsubstituted or substituted with 1 or 2 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, heterocyclic ring unsubstituted or substituted with 1 or 2 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a substituted or unsubstituted alkyl or alkenyl group as defined above incorporating as a group member a substituted or unsubstituted carbocyclic ring or a heterocyclic ring as defined above,

hydroxy, lower alkoxy, aryloxy, aryl lower alkoxy, amino, amino lower alkyl, lower alkyl amino, aryl amino or aryl lower alkyl amino, wherein the said alkyl, aryl or amino subgroups are unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above;

R₂ is

a straight or branched alkyl chain having 1 to 5 carbon atoms unsubstituted or substituted with 1 or 2 substituent(s) each independently being hydroxy, oxo, lower alkoxy, amino, lower alkyl amino, halogen, carboxyl, or lower acyl;

R₃ is:

H, cyano or COR⁴, wherein R⁴ is H, lower alkyl, cycloalkyl, cycloalkenyl, heterocycle or aryl, wherein the said lower alkyl is unsubstituted or substituted with 1 or 2 substituent(s) each independently being hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, cycloalkyl or heterocycle.

4. (Currently Amended) A compound according to claim 2 ~~any one of claims 2 or 3~~, wherein

R₁ is

a straight alkyl chain having 1 to 3 carbon atoms unsubstituted or substituted with 1 or 2 substituent(s) each independently being aryl, aryloxy, aryl lower alkoxy, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, a 3 to 7 membered, saturated or unsaturated, unsubstituted heterocyclic ring, lower alkoxy, lower alkyl amino, aryl amino or aryl lower alkyl amino;

R₂ is a straight or branched unsubstituted alkyl chain having 1 to 4 carbon atoms;

R₃ is:

H, cyano or COR⁴, wherein R⁴ is H or lower alkyl, wherein the said lower alkyl is unsubstituted or substituted with hydroxy.

5. (Currently Amended) A compound according to claim 1, wherein

X is C;

the dotted line represents a double bond;

R₁ is:

a straight or branched alkyl chain having 1 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) each independently being COOR⁴, COR⁴, CR⁴(OR⁵)₂, COCH₂OR⁶, cyano, hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, nitro, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, wherein R⁴ is H, lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, heterocycle, aryl or aralkyl, R⁵ is lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, aryl or aralkyl and R⁶ is H, lower alkyl, lower acyl or halogen,

a straight or branched alkenyl chain having 2 to 10 carbon atoms unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, carbocyclic ring unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, heterocyclic ring unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a substituted or unsubstituted alkyl or alkenyl group as defined above incorporating as a group member a substituted or unsubstituted carbocyclic ring or a heterocyclic ring as defined above,

hydroxy, lower alkoxy, aryloxy, aryl lower alkoxy, amino, amino lower alkyl, lower alkyl amino, aryl amino or aryl lower alkyl amino, wherein the said alkyl, aryl or amino subgroups are unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above;

R₂ is H;

R₃ is:

H, cyano, hydroxy, oxo, halogen, lower alkyl, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or

heterocycle, wherein the said alkyl subgroups are unsubstituted or substituted with 1 to 3 substituent(s) as defined for the alkyl group, in the meaning of R₁, above,

or R₃ is COOR⁴, COR⁴, CR⁴(OR⁵)₂ or COCH₂OR⁶, wherein R⁴ is H, lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, heterocycle, aryl, amino, lower alkyl amino, aryl amino or lower alkyl amino, wherein the said lower alkyl is unsubstituted or substituted with 1 or 2 substituent(s) each independently being cyano, hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle, R⁵ is lower alkyl, lower alkenyl, cycloalkyl, cycloalkenyl, aryl or aralkyl and R⁶ is lower acyl or halogen, ~~or a pharmaceutically acceptable salt or ester thereof.~~

6. (Original) A compound according to claim 5, wherein

R₁ is:

a straight or branched alkyl chain having 1 to 5 carbon atoms unsubstituted or substituted with 1 or 2 substituent(s) each independently being hydroxy, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, amino, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl or heterocycle,

a 3 to 7 membered, saturated or unsaturated, carbocyclic ring unsubstituted or substituted with 1 or 2 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a 3 to 7 membered, saturated or unsaturated, heterocyclic ring unsubstituted or substituted with 1 or 2 substituent(s) each independently being lower alkyl or as defined for the alkyl group above,

a substituted or unsubstituted alkyl or alkenyl group as defined above incorporating as a group member a substituted or unsubstituted carbocyclic ring or a heterocyclic ring as defined above,

hydroxy, lower alkoxy, aryloxy, aryl lower alkoxy, amino, amino lower alkyl, lower alkyl amino, aryl amino or aryl lower alkyl amino, wherein the said alkyl, aryl, or amino subgroups are unsubstituted or substituted with 1 to 3 substituent(s) each independently being lower alkyl or as defined for the alkyl group above;

R₃ is:

H, cyano or COR⁴, wherein R⁴ is H, lower alkyl, cycloalkyl, cycloalkenyl, heterocycle or aryl, wherein the said lower alkyl is unsubstituted or substituted with 1 or 2 substituent(s) each independently being hydroxy, oxo, halogen, lower alkoxy, aryl, aryloxy, aryl lower alkoxy, cycloalkyl or heterocycle.

7. (Currently Amended) A compound according to claim 5 ~~any one of claims 5 or 6~~, wherein

R₁ is

a straight or branched alkyl chain having 1 to 3 carbon atoms unsubstituted or substituted with 1 or 2 substituent(s) each independently being, aryl, aryloxy, aryl lower alkoxy, lower alkyl amino, aryl amino, aryl lower alkyl amino, cycloalkyl, or heterocycle, a 3 to 7 membered, saturated or unsaturated, unsubstituted heterocyclic ring, lower alkoxy, amino lower alkyl, lower alkyl amino, aryl amino or aryl lower alkyl amino, wherein the amino subgroups are unsubstituted or substituted with lower alkyl;

R₃ is:

H, cyano or COR⁴, wherein R⁴ is H or lower alkyl, wherein the said lower alkyl is unsubstituted or substituted with hydroxy.

8. (Currently Amended) A pharmaceutical composition comprising at least one compound ~~of formula (I)~~ according to ~~any one of~~ claims 1 to 7 and a pharmaceutically acceptable diluent, carrier and/or excipient.

Claims 9-12 (Canceled)

13. (Currently Amended) A method for the treatment of a disease or for the enhancement of a condition where prolyl oligopeptidase inhibitors are indicated to be useful, which comprises administering to a subject in need of the treatment or enhancement an effective amount of at least one compound ~~of formula (I)~~ according to claim 1.

14. (Original) The method according to claim 13, which comprises treating a neurodegenerative disease, and/or improving learning and memory functions.

15. (Original) The method according to claim 14, wherein the neurodegenerative disease is Alzheimer's disease or senile dementia.